CLAIMS

What is claimed is:

1. A method for predicting a search range for use in selecting a search center in motion video motion searching, comprising:

determining a maximum per-component difference of motion vectors of surrounding, already searched macroblocks; and

multiplying said maximum per-component difference by a number *n* to ensure said predicted range is large enough.

2. The method according to claim 1, wherein said number *n* equals 2.

3. A method for selecting a search center in motion video motion searching, comprising:

searching an integer number *j* of locations located approximately *r* pixels from an initial search center in a radial pattern and approximately equidistant from one another along a circumference of a circle of radius *r*, if a predicted search range is greater than or equal to an integer *p*; and

selecting a best location from among said integer number *j* locations.

4. The method according to claim 3, wherein said integer number *j* comprises a number selected from the group consisting of 5, 6, 7, 8, 9 and 10.

5. The method according to claim 3, wherein said integer number *j* equals 8.

6. The method according to claim 3, wherein said radius *r* comprises approximately 8 pixels.

7. The method according to claim 3, wherein said integer number *p* equals 8.

8. A method of motion searching a macroblock, comprising:

determining a predicted motion vector;

calculating a predicted search range;

selecting a starting location based on said predicted motion vector and said predicted search range;

selecting a search pattern based on said predicted motion vector; and

diamond motion searching said macroblock from said selected starting location based on said selected search pattern to determine a best motion vector.

9. The method according to claim 8, wherein said determining a predicted motion vector comprises finding a median for each component of motion vectors for three surrounding, already motion-searched macroblocks.

10. The method according to claim 8, wherein said calculating a predicted search range comprises determining a maximum difference for each component of motion vectors for three surrounding, already motion-searched macroblocks.

11. The method according to claim 10, further comprising doubling said maximum difference.

12. The method according to claim 8, wherein said selecting a starting location comprises:

if said predicted search range is less than an integer threshold *m*, then:

testing locations pointed to by three surrounding, already motion-searched macroblocks; and

selecting one of said locations having a lowest distortion as said starting location;

if said predicted search range is greater than or equal to said integer threshold *m*, then:

searching an integer number *j* of locations located approximately *r* pixels from an initial search center in a radial pattern and approximately equidistant from one another along a circumference of a circle of radius *r*, if a predicted search range is greater than or equal to an integer *p*; and

selecting a best location from among said integer number *j* locations.

13. The method according to claim 12, wherein said integer threshold *m* equals 8.

14. The method according to claim 12, wherein said integer number *j* comprises a number selected from the group consisting of 5, 6, 7, 8, 9 and 10.

15. The method according to claim 12, wherein said integer number *j* equals 8.

16. The method according to claim 12, wherein said radius *r* comprises approximately 8 pixels.

17. The method according to claim 12, wherein said integer number *p* equals 8.

18. The method according to claim 8, wherein said selecting a search pattern comprises:

selecting a small diamond search pattern if said predicted motion vector is less than or equal to a distance of *l* pixels; and

selecting a large diamond search pattern if said predicted motion vector is greater than said distance of *l* pixels.

19. The method according to claim 18, wherein said distance of *l* pixels comprises a distance of 2 pixels.

20. A method for compressing motion video images comprising:

inputting a video frame;

performing a motion search on each macroblock of said video frame comprising:

determining a predicted motion vector;

calculating a predicted search range;

selecting a starting location based on said predicted motion vector and said predicted search range;

selecting a search pattern based on said predicted motion vector and said predicted search range; and

motion searching said macroblock from said starting location based on said search pattern to determine a best motion vector;

storing a motion vector for each block in said video frame; and

residual coding of motion compensated errors.

21. The method of claim 20, further comprising repeating all steps for a subsequent video frame.

22. A system for transmitting and receiving video images, comprising:
computer instructions;
a processor configured for processing said computer instructions; and
a memory for storing said computer instructions;
wherein said computer instructions implement a method for compressing motion video images, said method comprising:
inputting a video frame;
performing a motion search on each macroblock of said video frame comprising:
determining a predicted motion vector;
calculating a predicted search range;
selecting a starting location based on said predicted motion vector and said predicted search range;
selecting a search pattern based on said predicted motion vector and said predicted search range; and
motion searching said macroblock from said starting location based on said search pattern to determine a best motion vector; and
storing a motion vector for each block in said video frame.

23. The system of claim 22, further comprising an input device in communication with said processor for capturing video images.

24. The system of claim 22, wherein said system is further configured to communicate over a network.